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Meeting Date: November 16, 2017  
Staff Contact: Rick Shean, Water Quality Hydrologist

**TITLE: OB-17-12 – Status Update for the Kirtland Air Force Base Bulk Fuels Facility Fuel Leak Corrective Action Activities**

**SUMMARY:**

The Albuquerque Bernalillo County Water Utility Authority (Water Authority) staff and their independent contractor, Intera, Incorporated (Intera), reviewed the recently submitted Resource Conservation and Recovery Act (RCRA) Investigation Report (RFI), and has provided comments to the New Mexico Environment Department (NMED), Kirtland AFB, the Air Force Civil Engineering Center, the U.S. Army Corps of Engineers, and their respective contractors.

In their technical review, Intera pointed out some of the following insufficiencies in the RFI:

1. Data gaps for vadose zone (or soil) contamination characterization; and
2. Inaccurate descriptions of the light nonaqueous phase liquid (LNAPL) plume; and
3. A lack of a description of how much contamination in the soil continues to move down towards the aquifer, or be coming into contact with the rising aquifer; and
4. An inadequate definition of the vertical extent of the dissolved phase ethylene dibromide (EDB).

When the Air Force submitted the RFI earlier this year, they did acknowledge there are existing data gaps that need to be addressed before the project moves to the next RCRA Corrective Action phase. Water Authority staff encourages the Air Force and their contractors to fill the data gaps and address the concerns provided in Intera's technical review of the RFI document.

In addition to the Water Authority's comments, the NMED responded to the document with their own comments regarding the RFI similar to the Water Authority's, which included that the document provided incomplete characterization of the EDB plume, incomplete and biased estimates of concentration trends and degradation, and incomplete delineation of the LNAPL plume. NMED requested that the Air Force participate in technical meetings with the key stakeholders and to submit a work plan addressing the identified data gaps for review and approval within 60 days for the technical meetings.

**FISCAL IMPACT:**

None

# **Review of RCRA Facility Investigation Report for Bulk Fuels Facility Kirtland Air Force Base, New Mexico**

Prepared by INTERA, Incorporated for the  
Albuquerque Bernalillo County Water Utility  
Authority

# Introduction

Air Force has made much progress in addressing the EDB plume since 2016

Staff and Intera committed to continue working with the Air Force as key stakeholders

Recently submitted RCRA Facility Investigation Report (RFI) by Air Force Contractor insufficient for next phase of work – addendums scheduled

# Key Findings

1. Soil data insufficient to estimate vadose zone source mass and mass flux to aquifer
2. Insufficient data and inaccurate description of LNAPL near and in saturated zone
3. Analysis presented misrepresents groundwater contaminant trends
4. Incomplete groundwater plume delineation

# LNAPL in Vadose Zone

- How much Light NonAqueous Phase Liquid (LNAPL, a.k.a. fuel product) in vadose zone migrates into aquifer now and in future?
- RFI has inadequate data about LNAPL above water table that will act as source
- Data gap may be resolved by proposed coring

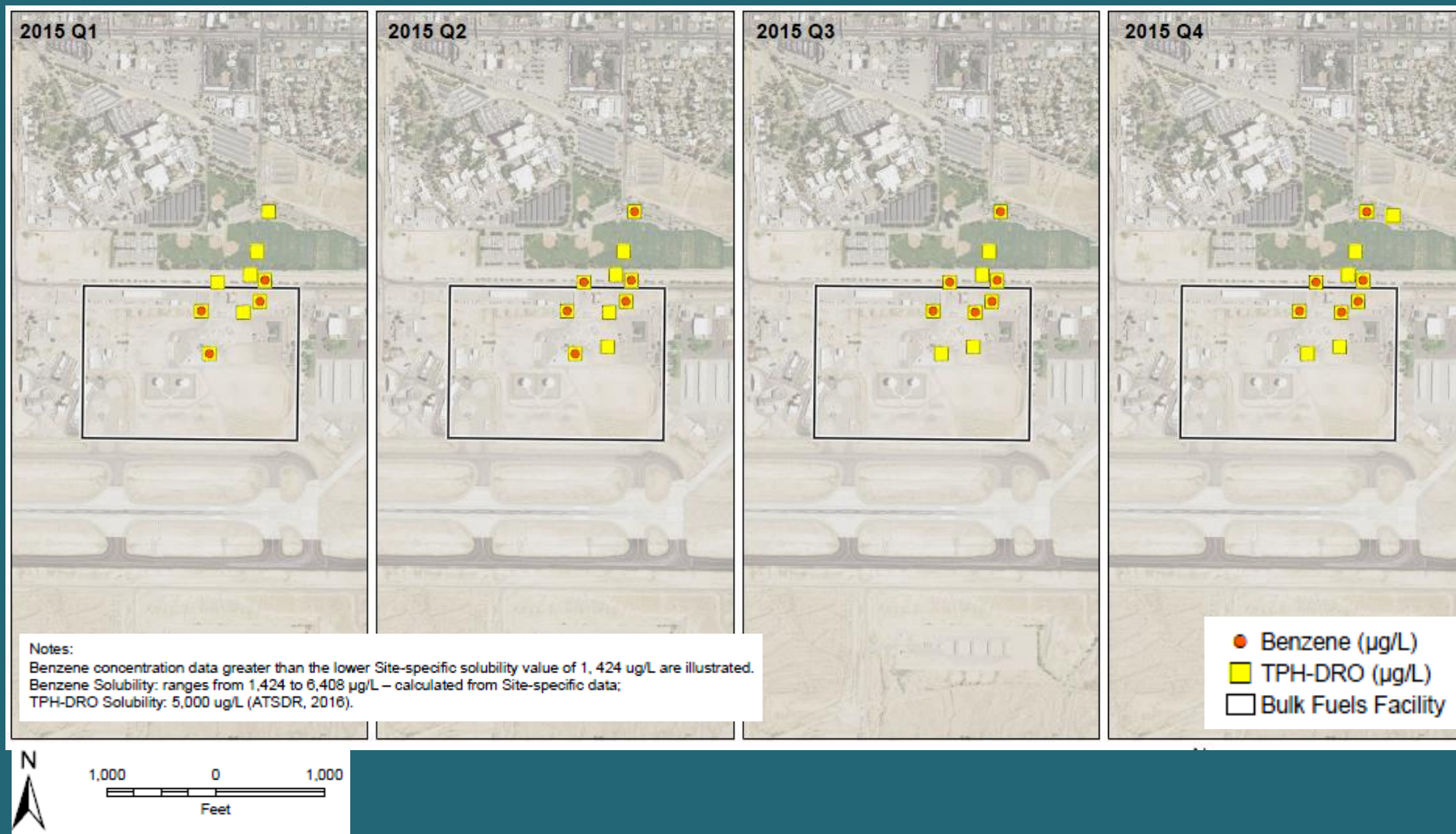
# LNAPL in Aquifer

- Location and mass of LNAPL in aquifer critical to evaluate long-term contaminant sources
- RFI does not address new contamination encountered by rising water table
- RFI does not use all available data to estimate how much LNAPL remains in aquifer
- Data gap may be resolved by proposed coring





# LNAPL Presence in Groundwater from Effective Solubilities: 2015



# Overestimates Degradation Rates

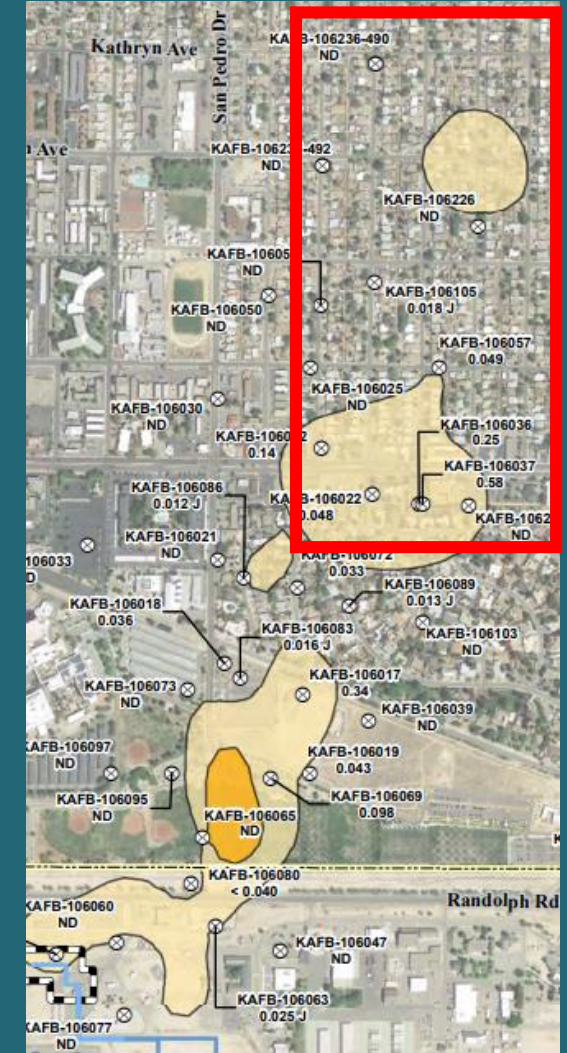
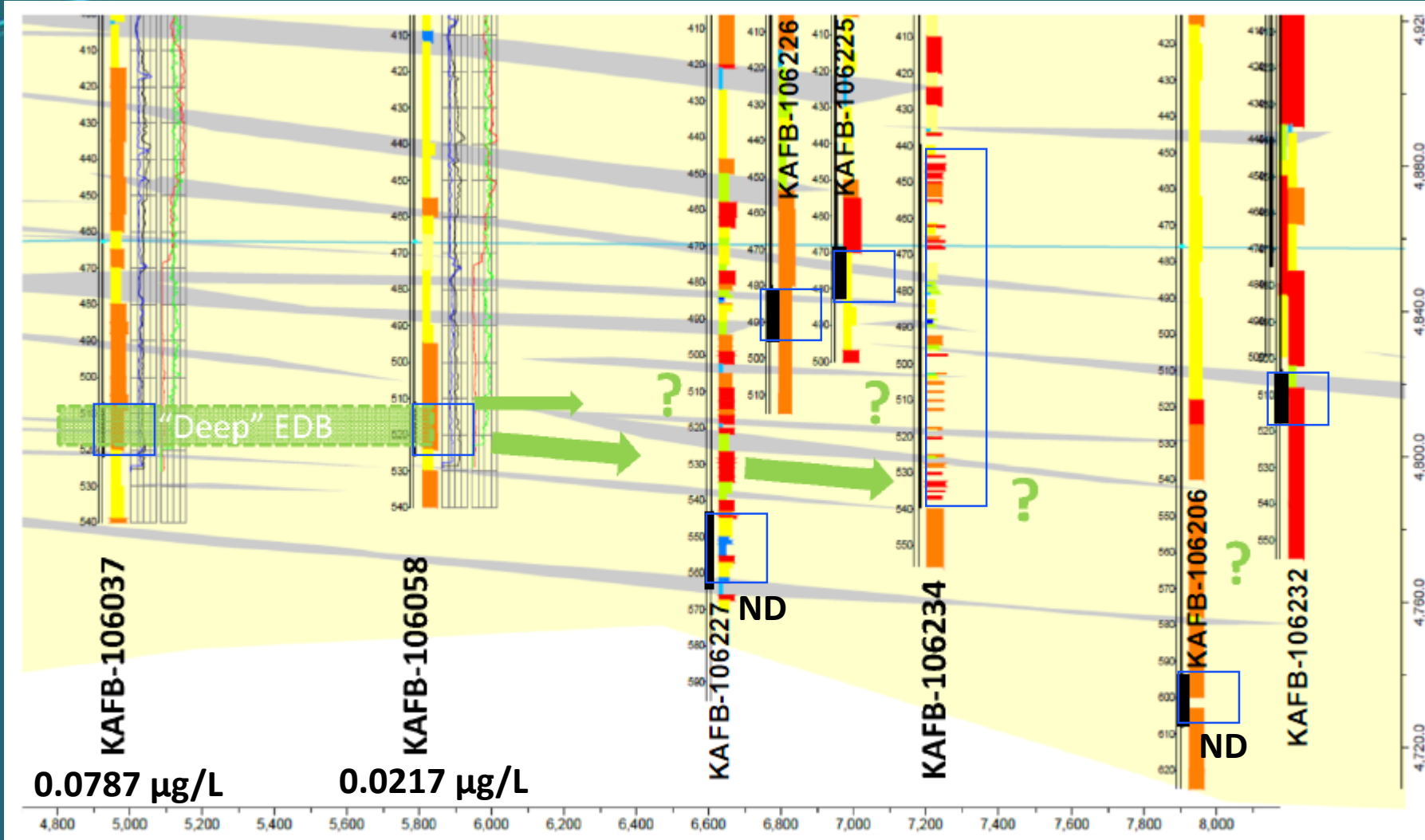
- RFI analysis treats concentration changes as solely caused by degradation – other explanations
- RFI overestimates degradation rates



# Drowning Well Screens

- Wells screens are drowned, while center of plume mass moving up.
- RFI data show EDB decreases – drowning or degradation?
- Need more water table wells to monitor
- Air Force recently agreed to add new shallow wells

# Inadequate Vertical Definition of Distal Plume



# Summary

- RFI not currently adequate for evaluating corrective measures
- Data gaps to be addressed in RFI Addendum:
  - Define LNAPL location and mass in vadose and saturated zones
  - Get data to estimate contaminant migration into aquifer
  - Define shallow and deep groundwater plume